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ABSTRACT

To determine the need, desirability, and training requirements for a gastroenterology assistant training program, interviews with gastroenterologists, a survey of 15 hospitals, and observations of gastroenterology laboratories were conducted. In addition, a questionnaire to ascertain which laboratory tests the assistant would perform was administered to 18 of the 27 physicians surveyed. Some findings and recommendations were: (1) The need for a gastroenterology assistant was supported, (2) A job description has been formulated, (3) A short on-the-job training program, with a comprehensive training manual, would be appropriate in most cases, (4) The suggested training program could provide a means of upgrading existing personnel skills, and (5) A salary range of $5,000 to $7,000, with opportunities for advancement, would be adequate in many cases. Additional background information is available in ED 037 570 and other allied health professions projects are VT 011 425-VT 011 432 in this issue. (SB)

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Interim Report

A STUDY OF AN EMERGING OCCUPATION:

THE GASTROENTEROLOGY ASSISTANT

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Division of Vocational Education
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FOREWORD

The Division of Vocational Education, University of California, is an administrative unit of the University concerned with responsibilities for research, teacher education, and public service in the broad area of vocational and technical education. During 1968 the Division entered into an agreement with the U.S. Office of Education to prepare curricula and instructional materials for a variety of allied health areas. For the most part such materials are related to pre-service and in-service instruction in programs from on-the-job instruction through Associate degree programs.

This interim report is a summary of the preliminary investigations conducted to identify the functions of a proposed occupation -- Gastroenterology Assistant. The California Regional Medical Programs Area IV (UCLA) provided assistance through the efforts of its Ad Hoc Committee on Gastroenterology Programs.

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TABLE OF CONTENTS

	Page
Foreword	iii
Table of Contents	v
Summary	1
Interim Report	3
Introduction	3
Definition and Description	4
Procedures	4
Educational Background	6
Salary Levels	6
Instruction	8
Program Development	10
Need	11
General Duties of the G.I. Assistant	13
Models	14
Discussion	15
Bibliography	17
Appendices	19
A. Roster of Ad Hoc Committee	19
B. Gastroenterology Questionnaire	21
C. Equipment List for the Gastroenterology Laboratory	27
D. Basic Course Outline, Gastroenterology Assistant	29
E. Gastric Analysis (Model)	31
F. Duodenal Drainage (Model)	35
G. Hospitals in the Los Angeles Area Having Gastroenterological Laboratories	39
H. Hospitals Surveyed for Education Backgrounds and Source and Type of Training of Gastroenterology Assistants	40

List of Tables

I. Educational Backgrounds of Gastroenterology Assistants	7
II. Source and Type of Training of Gastroenterology Assistants	9
III. Response to Regional Medical Program Questionnaire by Size of Hospital	12

S U M M A R Y

Objectives

1. To investigate the need and desirability of establishing a program for training gastroenterology assistants.

2. To develop suggestions for the preparation of instructional materials for gastroenterology assistants.

Procedure

1. Interviews with local gastroenterologists to seek out instructional materials, educational requirements, and estimates of need for a gastroenterology assistant.

2. Observation of gastroenterology laboratories in local hospitals.

3. Interviews with distinguished gastroenterologists from various sections of the United States and from foreign countries.

4. Distribution and evaluation of a questionnaire sent by the Allied Health Professions Projects to selected gastroenterologists seeking their views of the procedures that an assistant could safely and accurately perform.

5. Evaluation of a survey conducted by Area IV of the California Regional Medical Programs among hospitals in the San Fernando Valley.

Findings and Recommendations

1. The need for a gastroenterology assistant appears to have been supported.

2. A job description has been formulated for the gastroenterology assistant.

3. A short on-the-job training program, with a comprehensive training manual, would appear to be appropriate in most cases.

4. The suggested training program could provide a means of upgrading existing personnel skills.

5. A salary in the range of $5-7,000, with opportunities for advancement, would appear to be adequate in many cases.

Interim Report

THE GASTROENTEROLOGY ASSISTANT

Introduction

Gastroenterology is a branch of internal medicine that concerns itself with diseases of the stomach and digestive system. Of importance to this specialty is the accurate performance of certain laboratory procedures, such as gastric, biliary, and pancreatic function tests. Most of these tests are time-consuming but can be performed well by a trained technician. At present, these tests are performed by gastroenterologists or members of hospital staffs; in a few hospitals, they are performed by a gastroenterology assistant.

Early in 1969, a group of physicians associated with the California Regional Medical Programs (Area IV - UCLA) began to develop a proposal for a program to improve gastroenterological diagnosis and treatment in the community hospital. In addition to physician post-graduate education, the training of personnel to assist physicians in gastroenterological testing was thought to be an important and worthwhile area for activity.

The Area IV Gastroenterology Committee* undertook to define the need for a Gastroenterology Assistant (technician, allied medical specialist) and to develop a training program for this new allied medical worker. With this end in view, the Committee approached the Allied Health Professions Projects of the UCLA Division of Vocational Education for assistance in or suggestions for the development of the assistant's instructional program.

Accordingly, the Allied Health Professions Projects, working with a representative of the Area IV Regional Medical Programs, undertook work preliminary to the development of the desired curriculum or instructional materials. An investigation was proposed of the tasks to be performed by these assistants (task analysis), using the methodology established for the Allied Health Professions Projects. At the same time, the collection of currently available instructional materials was initiated.

The following activities were undertaken by the Projects:

1. Local gastroenterologists were visited in order to seek out instructional materials, educational requirements, and estimates of need for the gastroenterologist's assistant.

2. Local hospitals with gastrointestinal diagnostic units were visited to develop an inclusive task list.

3. Discussions were held with distinguished gastroenterologists from all sections of the United States as well as from other countries, who were assembled for an academic meeting in Aspen, Colorado.

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*Donald Brayton, M.D., Coordinator, Area IV, California Regional Medical Programs, David Fainer, M.D., Chairman, Ad Hoc Committee on Gastroenterology Programs, Melvin Schapiro, M.D. See roster of Ad Hoc Committee, Appendix A.

4. A questionnaire was devised and disseminated to elicit the opinions of gastroenterologists.

5. Response to an Area IV Regional Medical Program survey was analyzed.

Definition and Description

A gastroenterology assistant is a person trained in and capable of performing most aspects of gastroenterology tests, including the preparation and instruction of the patient, care of equipment, collection of samples, and accurate performance of the technical procedures, under the supervision of a gastroenterologist or a clinical pathologist. This definition is a composite of comments obtained through personal interviews with gastroenterologists and from written answers to the question, "How do you define a gastroenterology technician?"

This definition seems best to define what gastroenterologists want in a technician or assistant. But, on a practical basis, it seems necessary to define three levels or grades of assistants.

The first would be a laboratory technician or nurse drawn from the staff of the small community hospital. This individual would be under the supervision of the clinical pathologist and, in addition to regular duties, would perform the gastrointestinal tests most frequently requested by the hospital's staff. This level of assistant would be concerned both with the collection of materials and with the chemical analysis of these materials.

At the other end of the spectrum would be the assistant in the university setting, who has a strong biochemical background, and whose time is spent in both clinical and academic (research) work. Some of the clinical work would include those tests (such as certain motility procedures) that cannot be performed in smaller hospitals.

Third, and representing an intermediate between the two described above, would be the gastrointestinal assistant in the larger community hospital, who would devote his full time to work in a clinical gastroenterology diagnostic laboratory. This assistant would have separate laboratory space and would be trained to perform all of the clinical gastroenterological tests. The laboratory would form cooperative arrangements with smaller local community hospitals to perform the more difficult and less frequently requested tests that are seldom available in the latter institutions.

Procedures

To ascertain what clinical tests would be best suited to these assistants or technicians, a query was addressed to 25 gastroenterologists and 2 surgeons interested in gastrointestinal diseases. The instrument appears in Appendix B. From response to this questionnaire, those tests were selected that would be under a gastrointestinal assistant's domain.

The first level of assistant in the small community hospital would be trained to perform;

1. Gastric analysis
2. Gastric analysis with Histalog or Histamine

3. Gastric analysis with Insulin (Hollander)
4. Intraesophageal acid drip test (Bernstein)
5. Palmer test
6. Collections for esophageal and gastric cytology

In addition, this assistant could be trained to assist the qualified staff physician with:

1. G. I. string test
2. G. I. bleeding tube
3. Gastric biopsy
4. Small bowel biopsy
5. Menghini needle liver biopsy
6. Colon biopsy
7. Sigmoidoscopy
8. Esophagoscopy
9. Esophageal dilation
10. Tube tamponade of esophageal varices
11. Gastrocamera
12. Gastroscopy
13. Hypotonic duodenography

The assistant in the larger community hospital would, in addition to the above, be trained in:

1. Duodenal drainage with secretin
2. Duodenal drainage with gall bladder stimulation
3. Secretin provocative test
4. Duodenal cytology
5. Colon cytology
6. Test for protein excretion into intestinal tract
7. Assisting in percutaneous cholangiography
8. Assisting in splenoportography
9. Assisting in peritoneoscopy
10. Assisting in lymphangiography
11. Assisting in mecholyl test

The university-based assistant would be trained in all of the above tasks, as well as in many tests that require special equipment, or which, though not of proven diagnostic value, are of special or research interest. Such tests, for example, would be Esophageal Motility and Manometry, and Dissacharide Assay of Intestinal Mucosa.

There are other tests listed in the questionnaire that have a relationship to gastroenterology. These are felt to be under the domain of the hospital clinical laboratory, although training in any or all of these could be arranged on an individual basis, depending on need. They include:

1. D - Xylose tolerance test
2. Glucose tolerance test
3. Starch tolerance test
4. Dissacheride tolerance tests
5. Microscopic stool examination
6. Hematocrit

Still other tests fall under the direction of the radioisotope laboratory:

1. Schilling test
2. Radioisotope scanning of the liver, spleen, and pancreas
3. I-131 Triolein and Oleic Acid tests

Educational Background

To obtain a cross-section of the types of educational backgrounds assistants (technicians) now have, response to the questionnaire from the 18 physicians who work with gastroenterological technicians (17 gastroenterologists and one surgeon) was examined. The instrument included one question designed to elicit this information:

> If you have a person performing gastroenterology tests, would you comment on the following:
>
> 1. Highest grade completed by the technician
>   a. 1-8, 9, 10, 11, 12
>   b. Some college
>   c. Baccalaureate
>   d. Post-graduate

Response was tabulated and the results are shown in Table I, below. Almost all of the assistants covered proved to have some type of college background. This is to be expected, because gastroenterologists usually recruit a gastroenterology assistant from the clinical laboratory or from nursing personnel; this person will necessarily have a degree or some college experience. But is it really necessary for a technician in the larger community hospital to have a degree? The answer to that question, received during interviews, was, in the main, no. Most gastroenterologists said that, optimally, a person should have gone to a junior college, but that a bright high school graduate could be taught to do the tests accurately and safely. A high school graduate who is conscientious could be a good assistant.

Three points usually were made in support of training a high school graduate for the work. First, the job of performing tests is not clinically exciting and a person with too much background could become bored with the job, and thus performance could be marred. Second, establishing a criterion that a person be a L.V.N. or an R.N. in order to work in a gastroenterology laboratory would hamper the recruitment of males into this area. Third, it is just not that difficult to learn the main tasks involved in most procedures.

Salary Levels

In any emerging occupation, the salary level is ill-defined. The physicians responding in the survey said that the great majority of persons performing G.I. tests earn between $7,000 and $10,000 a year. This salary range seems compatible with the educational levels of most of the G.I. technicians covered by the survey.

TABLE I. EDUCATIONAL BACKGROUNDS OF GASTROENTEROLOGY ASSISTANTS

Location of Hospital	Number of Beds	Number of Assistants	Highest grade completed
Seattle, Washington	2500(total)	2	1, Baccalaureate; histology technician 1, Cytology technician; some college
Chicago, Illinois	2000	1	(Technician in charge of G.I. Lab); some college
Los Angeles, California	1300	4	1, 8 2, Some college 1, Post-baccalaureate; main lab technician performing clinical work
Baltimore, Maryland	1200	2	1, Baccalaureate 1, Post-baccalaureate
Durham, North Carolina	1200	2	Some college - physician's assistant (for actual lab work), plus assistant
Los Angeles, California	800	1	Baccalaureate; licensed technician
Glasgow, Scotland	800	4-5	Some college
Torrance, California	750	1	High school graduate
Los Angeles, California	500	3	R.N., some college
Denver, Colorado	458	1	Baccalaureate
Marshfield, Wisconsin	425	1	Baccalaureate
Los Angeles, California	400	1	Some college
Milwaukee, Wisconsin	400	1	Baccalaureate
Los Angeles, California	350	1	Some college (foreign)
Burbank, California	250	1	Baccalaureate; licensed technician
Phoenix, Arizona	250	1	Some college
Salt Lake City, Utah	250	1	Post-baccalaureate
Van Nuys, California	200	1	Some college, L.V.N.

It is recommended that if high school graduates are accepted for this occupation, starting salaries be set at $5-7,000 a year, with opportunities for advancement. The salary should be high enough to attract bright young people who wish to explore this field.

Instruction

In the Los Angeles area, most instruction in gastroenterology laboratory procedures is either in the form of on-the-job training with the gastroenterologist in charge of the laboratory serving as teacher, or by sending the prospective assistant to receive training at a hospital where these laboratory procedures are being done.

The questionnaire filled out by the 18 physicians also asked where their technicians had received their training and what instructional method was used. Table II, on the following page,lists the results of the query. Response showed that on-the-job training is the most prevalent method.

To supplement training, the physicians said the beginner is usually given some type of written instructions or a manual, to explain how the procedures are carried out, and to provide some theoretical information about the test concerned. A number of such manuals were gathered in connection with this study (see listing in Bibliography). In most instances, this material is essential for effective training. To develop such a manual, the following recommendations are offered:

1. The manual should contain a glossary of the specialized vocabulary related to G.I. laboratory work, as well as terms common to other areas and activities of the hospital.

2. Each of the tests should be broken into steps, and the statement of each step should be accompanied by an illustration or diagram.

3. Basic theoretical considerations underlying each of the tests should be discussed along with the instructions for the test.

4. There should be a list of the drugs found in the G.I. laboratory along with statements of the drugs' functions and their effects on the patient.

5. The manual should include a brief illustrated section on the anatomy of the gastrointestinal system plus diagrams showing where tubes are to be placed for different tests.

6. There should be a section on first-aid for shock and other common patient problems.

7. The manual should contain a detailed equipment list (see Appendix C).

8. To orient the gastrointestinal assistant to the relationships between the lab and other units in the hospital, and to hospital routines affecting the work of the G.I. laboratory, a section should be included providing this information.

TABLE II. SOURCE AND TYPE OF TRAINING OF GASTROENTEROLOGY ASSISTANTS

Location of Hospitals	Number of Assistants	From whom was training obtained?	Method of training employed
Seattle, Washington	2	Gastroenterologist in charge.	OJT, 1, 2 months 1, more than 3 months
Chicago, Illinois	1	Gastroenterologist in charge.	OJT, 3 months
Los Angeles, California	4	3, V.A. Hospital 1, Cytology School	3, OJT, more than 3 months
Baltimore, Maryland	2	Gastroenterologist in charge and research personnel	OJT, more than 3 months
Durham, North Carolina	2	Duke University Medical Center	Physicians' Assistant Program
Los Angeles, California	1	UCLA Division of Gastroenterology	OJT
Glasgow, Scotland	4-5	Physicians and fellow-technicians	OJT, more than 3 months
Torrance, California	1	Gastroenterologist in charge.	OJT, 1 month
Los Angeles, California	2	Gastroenterologist in charge.	OJT, 1 month
Denver, Colorado	1	House staff	OJT, 3 months
Marshfield, Wisconsin	1	Mayo Clinic	Not specified
Los Angeles, California	1	Staff gastroenterologist	OJT, more than 3 months
Milwaukee, Wisconsin	1	Chicago University	Biochemist taught him
Los Angeles, California	1	Gastroenterologist	OJT, 1 month
Burbank, California	1	Gastroenterologist in charge and lab techs at other hosp.	OJT, 3 months
Phoenix, Arizona	1	Technician's school of hospital	OJT, more than 3 months
Salt Lake City, Utah	1	U. of Utah Physicians' Asst. Training Program	OJT, more than 3 months
Van Nuys, California	1	Gastroenterologist in charge.	OJT, 3 months

The tests described in such a manual should be organized in the following manner:

1. Analysis tests and secretory tests
2. Tolerance tests
3. Tube and string tests
4. Biopsy procedures
5. Endoscopic and dilatation procedures

In addition to the step-by-step presentation of each test, the manual could include the specifics related to that area. For example, under the heading of secretory tests, there would be four sub-headings:

1. Intubation

    a. Preparation
    b. Performance
    c. Problems

2. Collection

    a. Preparation (including illustrated instructions on equipment, e.g., Stedman pumps)
    b. Performance
    c. Problems

3. Analysis

    a. Preparation
    b. Performance
    c. Problems

4. Injections

    a. Preparation
    b. Performance
    c. Problems

The general consensus among the gastroenterologists is that on-the-job training is essential to the program. The AREA IV Regional Medical Program is considering the establishment of a center for training G.I. technicians at a large hospital where sufficient numbers of patients are available. Such a program could incorporate the suggestions set forth for development of a training manual. One example of a training program outline, whose emphasis is somewhat different from that proposed here, is shown in Appendix D. This is the gastroenterology assistant program conducted by the Veterans Administration Hospital in Seattle, Washington under the direction of Charles Pope II, M.D.

Program Development

Of concern to certain physicians is the idea of offering a certificate of some sort attesting to the successful completion of a stated amount of instruction in the area of gastroenterology. Their concern is that the person trained solely to perform such procedures may have limited mobility

when seeking a better job. Two suggestions are offered that may be of help in this connection: first, the establishment of a program combining cytotechnology and gastroenterology, which would develop an assistant with a broader range of capacities, and second, the establishment of a rotating program, whereby technicians could move through several services in the hospital, such as G.I., EEG, and EKG, acquiring additional skills with each move. (This program currently is being used in Scotland.)

In addition, developing the concept of the "mobile technician," who could serve several hospitals on a part-time basis through cooperative arrangements, appears to offer attractive and valuable incentives. This type of program is being used informally at several local (Los Angeles area) hospitals.

Need

To obtain data related to possible need for the gastroenterology assistant, the Area IV Regional Medical Program sent a questionnaire to the administrators of hospitals in and around the San Fernando Valley in Southern California. This was done prior to establishing contact with the Allied Health Professions Projects. Fifteen hospitals were surveyed, ranging in size from 65 to 860 beds, and averaging 271 beds. The following questions were asked:

1. Do you feel that the collection of gastrointestinal material for cytological and chemical evaluation is adequately and easily obtained under your current facilities and technical assistance?

2. Would you desire to have laboratory or nursing-trained technical assistance for gastrointestinal diagnostic procedures?

3. Would you or your representative (hospital-based or staff physician) desire a short training program in gastrointestinal diagnostic techniques?

In answer to the first question, eight hospitals responded affirmatively and six negatively; one replied that it did not have the facilities. Seven said "yes" and seven "no" to the second question. To the third, ten replied "yes" and three "no." Response is shown in Table III, below.

The answers to the first question indicate that fewer than two-thirds of the hospitals queried feel that their gastrointestinal service is adequate. It should be noted that in some cases the personnel answering this survey may have slanted their answers in favor of their hospitals; when a trained gastroenterologist visited these same hospitals later, he found that, for the most part, gastrointestinal laboratory work was poorly done and antiquated equipment was used. (It also is possible, of course, that the respondents were not familiar with current standards of excellence in G.I. lab work.)

The response to the second question indicates that half of the hospitals responding would like to have a gastroenterology assistant available.

As indicated by the answers to the third question, the majority of hospitals queried would like a training program to strengthen their G.I.

laboratory skills. This might tend to suggest some bias in the answers to the first question.

It seems premature to draw any specific conclusions from this small survey. On the basis of the findings, however, it may be concluded that help, whether it be through availability of a gastoenterology assistant or through instruction in diagnostic procedures, is wanted by the majority of the hospitals queried.

Table III . RESPONSE TO REGIONAL MEDICAL PROGRAM QUESTIONNAIRE, SAN FERNANDO VALLEY HOSPITALS, BY SIZE OF HOSPITAL

Size of Hospital (Number of Beds)	1. Is your G.I. Lab Service Adequate?		2. Do you Desire a Trained Assistant?		3. Do You Desire Training in G.I. Diagnostic Techniques?	
	YES	NO	YES	NO	YES	NO
65		x	x		x	
110		x	x		x	
112		x	x		x	
114	x			x	x	
150	x					
160		x	x		x	
168	x			x	x	
194		x	x		x	
200	x			x		
206	x			x	x	
230	x			x		x
259	x			x		x
474				x		x
774		x	x		x	
860	x		x		x	
	8	6	7	7	10	3

On the subjective side, a number of physicians were interviewed, including gastroenterologists, surgeons, and radiologists, about the need for a gastroenterology assistant, without defining what such a person would do. The immediate response to the question was "yes," with qualifications; that is, there was concern over the economics of a training program and the educational background such a person would need, and about the proper use of such a person.

The responding physicians gave two reasons why they felt an assistant was needed:

1. The diagnostic procedures are, in the main, too time-consuming for the physician or house staff to do, and a properly trained assistant could safely and accurately perform them.

2. To get accurate results in these tests, one needs a person who is intensely interested in the tests themselves and who can devote the necessary time to the patient--hence, a full-time assistant is preferable to a nurse, who is responsible for a number of patients.

General Duties of the G.I. Assistant

Pre-procedure

1. Schedule patients
2. Prepare lab (make gurney, clean area, etc.)
3. Transport patient from ward to laboratory
4. Determine from patient's chart if scheduling is correct
5. Explain test to patient
6. Operate all equipment

Post-procedure

1. Make up bill
2. Make monthly financial report
3. File forms for patient
4. Send laboratory report to physician and put in patient's chart.
5. Telephone physicians to tell results
6. Clean equipment (glassware, tubes, endoscopes, dilators, microscopes, pH./meters, etc.; see detailed equipment list in Appendix B)
7. Order equipment
8. Order medication

Technical Work

1. Chill centrifuge tubes
2. Operate centrifuge
3. Perform filtration
4. Make up chemical solutions
5. Prepare slides for pap smears

Managerial Tasks

1. Coordinate work orders with other departments
2. Plan and schedule work assignments
3. Plan record keeping
4. Plan the maintenance and distribution of reports, records, films, and correspondence
5. Direct collection and forwarding of forms and reports
6. Determine equipment repairs and replacements needed
7. Evaluate the maintenance and use of equipment
8. Supervise the maintenance of laboratory supplies
9. Perform preventive maintenance on laboratory equipment

Patient Care

1. Perform first aid for shock
2. Check patient's vital signs
3. Comfort patient

Instruction

1. Instruct house staff on proper preparation of a patient
2. Prepare G.I. conferences (setting up signs, obtaining room, etc.)
3. Give on-the-job instruction in G.I. laboratory work
4. Assist in G.I. research projects

Models

Appendices E and F demonstrate work-ups of two frequently performed diagnostic tests. The outlines for these two procedures were derived from observation at one of the gastrointestinal diagnostic laboratories. The handling of these tasks at other laboratories is similar, with certain modifications.

Discussion

The job of the gastroenterology assistant would consist mainly of safely intubating patients and accurately collecting materials to be analyzed. Currently, assistants are recruited from among laboratory and nursing personnel and trained on the job. It is felt that to meet varying levels of need for their services, there could well be three categories or levels of G.I. assistants: those with a varying amount of college training, comprising (1) assistants in smaller community hospitals who are drawn from the ranks of lab assistants and nurses and trained on the job in specific G.I. procedures, and (2) those technicians working in a university setting and involved in both academic (research) and clinical work; and (3) the full-time assistant in a larger hospital, devoting all his time to working with gastroenterologists. Because of the nature of the job, the last-named is considered appropriate for the conscientious high school graduate, who can be trained on the job.

Training of the G.I. assistant to perform the duties described in this report would best be offered in a university setting or a large community hospital, where enough patients would be available to provide adequate learning experience. It might take the form of short intensive on-the-job training, utilizing a comprehensive training manual for whose content suggestions have been offered.

Salary levels should be commensurate with educational background. It is suggested that $5-7,000 would be appropriate for a high school graduate after initial training, with opportunities provided for advancement. For a junior college or college graduate, the salary range might be $7-10,000.

A number of hospitals feel that there is a need for improvement in their gastrointestinal services, but in some cases, physicians' requests for procedures are infrequent. It would be helpful if an educational program could be directed to internists and general practitioners to inform them of the scope of diagnostic procedures available in the field of gastroenterology. This, in turn, would lead to greater utilization of the G.I. laboratories, with consequent increased demand for the service of G.I. assistants. Conversely, availability of assistants might well lead to greater activity on the part of the gastroenterologist as personnel becomes available to take over the tedious tasks involved in G.I. lab procedures.

JK/KLG:bhc
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M. Ellison, Editor

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3. Chalmers, Thomas C., M.D. Gastroenterologist, Veterans Administration Hospital, Washington, D. C.

4. Gillespie, Iain, M.D. Surgeon, Western Infirmary, Glasgow, Scotland.

5. Grossman, Morton I., M.D., Ph.D. Chief Investigator in Gastroenterology, Wadsworth Hospital, Veterans Administration Center, Los Angeles.

6. Hallenbeck, George A., M.D. Surgeon, University of Alabama Medical Center, Birmingham.

7. Janowitz, Henry, M.D. Gastroenterologist, Mount Sinai Medical School, New York City, New York.

8. Kern, Fred, M.D. Head, Division of Gastroenterology, University of Colorado Medical Center.

9. Littmann, Armand, M.D. University of Chicago School of Medicine.

10. McGuigan, James E., M.D. Chief, Division of Gastroenterology of of the J. Hillis Miller Health Center, University of Florida, Gainesville.

11. Makhlouf, Gabriel, M.D., Ph.D. Gastroenterologist, University of Alabama Medical Center, Birmingham.

12. Marks, I. N., M.D. Head, Division of Gastrointestinal Service, Groote Schuur Hospital, University of Cape Town, Cape Town, South Africa.

13. Mendeloff, Albert I., M.D. Gastroenterologist, Johns Hopkins School of Medicine, Baltimore.

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15. Pfeffer, Mira, M.D. Gastroenterologist, Los Angeles.

16. Rimer, David, M.D. Gastroenterologist, Los Angeles

17. Rubin, Cyrus, M.D. Gastroenterologist, University of Washington, Seattle.

18. Samloff, Michael, M.D. Head, Division of Gastroenterology, Harbor General Hospital, Torrance, California.

19. Schapiro, Melvin, M.D. Gastroenterologist, Encino, California

20. Schwabe, Arthur, M.D. Head, Division of Gastroenterology, University of California at Los Angeles.

APPENDIX A

CALIFORNIA REGIONAL MEDICAL PROGRAMS

AREA IV UCLA

Ad Hoc Committee on Gastroenterology Programs

David Fainer, M.D., Chairman

William Bachrach, M.D.

Peter Barrett, M.D.

Morton I. Grossman, M.D.

Paul Guth, M.D.

Leo Kaplan, M.D.

Joel Panish, M.D.

Robert Peters, M.D.

Martin Pops, M.D.

David Rimer, M.D.

Michael I. Samloff, M.D.

Melvin Schapiro, M.D.

Arthur Schwabe, M.D.

Carl Strouse, M.D.

Albert Svoboda, M.D.

APPENDIX B

University of California, Los Angeles
Division of Vocational Education
Allied Health Professions Projects

GASTROENTEROLOGY QUESTIONNAIRE

1. Do you have a gastroenterology technician or a person doing gastroenterology diagnostic tests under your supervision?

   Comments:_____

   _____

2. If you do not have a gastroenterology technician, whom do you use for performing diagnostic tests?

   Comments:_____

   _____

3. If you do have a person performing gastroenterology tests, would you comment on the following:

   1) Highest grade completed by technician: (circle one)

      1-8, 9, 10, 11, 12, Some College, Baccalaureate, Post-Baccalaureate

   2) Certification, licensure, registration held, e.g., R.N. or L.V.N.

      Please specify:_____

   3) From whom he received his training:

      _____

   4) Where he was taught:

      _____

   5) Educational or Training Program completed (circle the number next to your answer)

      1 - None

      2 - On the Job Training: How long? (circle one)

      2 wks. 1 mo. 2 mos. 3 mos. Longer than 3 mos.

      3 - Military

      4 - Other (specify):_____

   6) Position or title of person in question_____

      Age_____ Sex (circle one) M F

7) Approximate yearly income range: (circle one)

1 - Less than $2,000

2 - $2,000 to $3,999

3 - $4,000 to $6,999

4 - $7,000 to $9,999

5 - $10,000 or more

8) Approximately how many hours a week does he spend performing gastroenterology tests?

_____

4. How do you define a gastroenterology technician? _____

_____

_____

5. A list of tests associated with the tasks a technician could perform or assist with appears below. Please answer each question carefully.

TESTS	If you have a G.I. technician, which of the tests listed does he perform or assist in?	If you do not have a G.I. technician, which tests would you like one to be trained in?	Which tests should be available in most local hospitals or communities?	Which tests should be available through cooperative arrangements with other hospitals?	Which tests should only be available in a university center?	Which tests are not of a proven diagnostic value?
1. Gastric Analysis						
2. Gastric Analysis with Histolog or Histamine						
3. Gastric Analysis with Insulin (Hollander)						
4. Intra Gastric Acid Drip Test (Palmer)						

TESTS	If you have a G.I. technician, which of the tests listed does he perform or assist in?	If you do not have a G.I. technician, which tests would you like one to be trained in?	Which tests should be available in most local hospitals or communities?	Which tests should be available through cooperative arrangements with other hospitals?	Which tests should only be available in a university center?	Which tests are not of a proven diagnostic value?
5. Intra Esophageal Acid Drip Test (Bernstein)						
6. Duodenal Drainage with Secretin						
7. Duodenal Drainage with Gallbladder Stimulation						
8. Lundh Test						
9. Secretin Provocative Test						
10. Esophageal Cytology						
11. Duodenal Cytology						
12. Colon Cytology						
13. Gastric Cytology						
14. Saline Load For Gastric Retention						
15. Ewald Gastric Lavage						
16. Amigen Drip Test						
17. G. I. String Test						
18. G. I. Bleeding Tube						
19. Gastric Biopsy						
20. Small Bowel Biopsy						
21. Menghini Needle Liver Biopsy						
22. Colon Biopsy						
23. Sigmoidoscopy						

TESTS	If you have a G.I. technician, which of the tests listed does he perform or assist in?	If you do not have a G.I. technician, which tests would you like one to be trained in?	Which tests should be available in most local hospitals or communities?	Which tests should be available through cooperative arrangements with other hospitals?	Which tests should only be available in a university center?	Which tests are not of a proven diagnostic value?
24. Beta Carotene and Vitamin A Fractionation						
25. D-Xylose Tolerance Test						
26. Starch Tolerance Test						
27. Glucose Tolerance Test						
28. Disaccharide Tolerance Tests						
29. Disaccharide Assay of Intestinal Mucosa						
30. Test for Protein Excretion into Intestinal Tract						
31. Schilling Test						
32. Microscopic Stool Examination						
33. Nitrogen Balance Study						
34. I 131 Triolein and Oleic Acid Tests						
35. Hematocrit						
36. Percutaneous Cholangiography						
37. Splenoportography						
38. Peritonescopy						
39. Esophagoscopy						
40. Esophagael Diliation						

TESTS	If you have a G.I. technician, which of the tests listed does he perform or assist in?	If you do not have a G.I. technician, which tests would you like one to be trained in?	Which tests should be available in most local hospitals or communities?	Which tests should be available through cooperative arrangements with other hospitals?	Which tests should only be available in a university center?	Which tests are not of a proven diagnostic value?
41. Mecholyl Test						
42. Esophageal Motility and Manometry						
43. Use of Linton Tube to Tamponade Esophageal Varices						
44. Radioisotope Scanning						
Liver						
Spleen						
Pancreas						
45. Lymphangiography						
46. Cineradiography or T.V. Tape						
47. Gastrocamera						
48. Gastroscopy						
49. Hypotonic Duodenography						
50. Other						

continued...

6. Name of hospital with which you are affiliated:

_____

7. Approximate number of beds in hospital:

_____

APPENDIX C

Equipment List for the Gastroenterology Laboratory

PHARMACY:

Stock: Secretin
Cholecystokinin, decholin
Histalog
Antihistamines, Epinephrine, I.V. solutions, antacids

Space for: Equipment
Bed
Chairs
Sink
Work space
Place for burets
Cabinet space
Place for linens
Medicine cupboard
Shelves for glassware

Syringes: Disposable tuberculin 1 cc.
Disposable 2 1/2 cc. (with needle)
Disposable 10 cc.

Needles: Leave to physician's choice

Emergency tray: Stethescope
B. P. cuff
Airway
O_2 setup

Miscellaneous Necessities:
File guides (metal top)
File guides (letter size)
File guides (4 in.x 6 in.)
Rolodex
Plastic bottles for chemicals
Cotton balls and dispenser
Alcohol dispensers
Drying board for equipment (optional necessity)
Typewriter
Desk
File cabinet (small)
File cabinet (large), 2 drawer

pH paper: (0-3 & 3-9) double dispenser
(0-3 & 3-515) double dispenser
(6-8) single dispenser
Y-type I.V. infusion sets with filter
K-Y jelly, 5 oz. tubes

Tape, 1/2 in. rolls (adhesive)
Tape, 1 in. roll (masking)
Bandage scissor
Pipet 1 ml.
Pipet 10 ml.
Rubber stoppers (single hole) #6
Rubber stoppers (2-hole), #5 1/2
Swipes
Coplin staining jars (screw cap)
Foot stools (12 in. x 16 in. x 8 in.)
Comfortable chairs
Scale (Health-O-Meter)

Chemicals:
Reagent bottle (Topfer's)
Topfer's reagent
Normal HCl
0.1 N NaOH

Major equipment:
Angle centrifuge
Cellulous nitrate tubes
Cellulous nitrate tube covers
Stedman pumps
Small bowel biopsy capsule

Small equipment:
Buret, micro, 5 ml., read 10 ml. Rl
Buret stand and wing clamp
Magnetic mixer and stirrer
Vacuum flasks, 250 ml.
Beakers, 50 ml.
Beakers, 600 ml.
Quick connect, 6 oz.
Wash bottles, 6 oz.
Glass syringe (catheter tip), 50 ml.
Glass syringe (Luer lock), 50 ml. Glas
Disposable Kaslow stomach tube, K-10, 16 French
Tomac 3/16 in. Lumen connecting tube 72 in.
Radiopaque K-10r Kaslow stomach tube
Feeding tube K-30
Dreiling tube (double lumen)
Time clocks
Carts (movable)
I.V. pole
Graduated cylinder, 500 ml.
Graduated cylinder, 100 ml.
Conical centrifuge tube rack
Graduated conical centrifuge tubes

APPENDIX D

BASIC COURSE OUTLINE, GASTROENTEROLOGY ASSISTANT -- Charles Pope II, M.D., Chief, Department of Gastroenterology, Veterans Administration Hospital, Seattle, Washington.

Gastroenterology Assistant

The objective in training a gastroenterology assistant (GA) is to produce an individual capable of assisting gastroenterologists practicing in a large hospital or clinic. Initially, it is envisioned that these individuals will find a place in VA hospitals which maintain a large load of patients with gastroenterologic problems. Under an M.D.'s durection, this assistant will apply the skills learned in this program so as to free the gastroenterologist from routine duties. In addition to this role, the GA will be able to instruct others in the techniques he has been taught. The complexity of his duties will require an intelligent, highly motivated individual, preferably with either a junior college or four year college degree. It will be expected that trainees will be supported at a level which will attract competent dedicated individuals who will wish to make this their career.

The GA's training can best be considered under two groupings. One will be his instruction in his function as a technologist; the other will be instruction in his role as a specialist-nurse technician.

As a technologist, the GA will be expected to handle mucosal biopsies and liver biopsies; to process, orient, serial section, stain and mount these specimens. The GA will also be able to collect cytological specimens, stain them, and screen the slides to check on the adequacy of collection and to detect the presence of possibly malignant cells.

The GA's other main function will be as a specialist nurse-technician to aid the physician during patient-oriented procedures. These duties will include setting up and caring for instruments used in endoscopy, loading and unloading the gastrocamera, cleaning and simple maintenance of the esophagoscope and the gastroscope. He will assist during the procedure, holding the patient's head or aspirating the mouth. He will aid in proctosigmoidoscopy, preparing and cleaning the instruments, assisting with the patient, examining specimens obtained for parasites, blood or fat.

The GA would also assist in intubation for secretin tests, small bowel biopsies and gastric analysis. The GA would be trained in collection techniques for secretin and gastric analysis. The GA would prepare equipment used for esophageal manometry. He would be capable of operating multi-channel recorders and strain gauge preamplifiers. He would be versed in performance of esophageal acid perfusion tests (Bernstein) and intro-esophageal pH reflux tests (Tuttle).

Training Course

The course would last 53 weeks and would consist of the following basic structure:

Cytology - 6 months. Mrs. Lilian Taniguchi, Supervisor, Cytology School and her staff.

This period of time will be spent in learning collection techniques of gastrointestinal cytology, methods of preparing the specimens, and examining the prepared material to ascertain adequacy of collection. Beginning instruction in screening the slides for the presence of possible malignant cells will be given. These latter two activities require much practice and supervision; approximately 6 months is felt to be a reasonable training period for the trainee.

Histology - 3 months. Mr. Paul M. Horton, Biological Laboratory Technician, VA Hospital

Instruction in the care and handling of biopsy material, both small bowel and liver will be given. Orientation and serial sections are crucial to the proper interpretation of small bowel biopsies. This is not often available in standard surgical pathology laboratories. The training period for these methods and adequate practical experience will be approximately 3 months.

Patient Procedures and Manometry - 3 months. Mr. Paul M. Horton
Mrs. Bertha Lowenstein, Endoscopy Nurse, University of Washington

During this period, the trainee will learn to assist with intubations of various types. Care and simple maintenance of endoscopy equipment will be learned. The trainee will assist with esophageal manometry and learn to operate the equipment necessary for its performance. Approximately 3 months is set aside for this phase.

The Gastroenterology Assistant, when finished with this program, will have a combination of skills which should make him unique. He will be well-versed in morphologic techniques which are becoming increasingly important in modern gastroenterology. This group of skills takes a good deal of time to learn and has been assigned a large amount of instruction hours. However, the patient-orientated procedures, which will take less time to learn, are equally important in the education of a well-rounded assistant. This program is not designed to produce a cytology technician with a smattering of other abilities, but rather an assistant able to function effectively in several separate areas.

APPENDIX E

GASTRIC ANALYSIS

Preparation

1. The hospitalized patient is brought by the technician to the G.I. laboratory.

2. The patient's chart is reviewed for previous surgery and to make sure that the patient has not eaten nor had any medications since the night before.

3. The technician may also read the history and physical to gather information about the patient.

4. The patient's information sheet is prepared. This may include the patient's hospital number, phone number, work phone number, place and type of employment, previous surgery, etc.

Intubation

1. The patient is given a Kleenex and an emesis basin and is told to clear the throat and nose.

2. Dentures (if any) are removed and placed in a denture cup.

3. The patient is asked through which nostril breathing is easier.

4. The patient is instructed to continue swallowing throughout the intubation period.

5. K-Y jelly is smeared on the tip of a radiopaque K-10 Kaslow tube.

6. Before intubation, a "Christmas tree" connector is attached to the suction end of the tube.

7. Intubation is attempted through the nostril through which breathing is easier. (Intubation may be effected through the mouth under certain circumstances.)

8. Intubation is begun by gently pushing the tube into the nostril. After the tube gets past the posterior pharynx (which can be felt by the technician) the patient puts his chin to his chest. (This closes off the trachea.)

9. After the tube has progressed downward approximately 18 inches (to the first marker on the tube) the head may be raised.

Tube Placement

1. The tube is taped to the nose and shoulder with adhesive tape (any type of tape may be used, but adhesive has been found to work the best).

2. The patient is placed in a wheelchair and brought to the X-ray department.

3. The placement of the tube is checked fluoroscopically. The tip should be located in the antrum of the stomach. The technician may assist in the manipulation of the tube to place it in the proper position.

4. The patient is returned to the G.I. laboratory.

Analysis

1. With a 50 cc. aspirating syringe the stomach is aspirated of its entire contents. This fluid is called the "residual volume".

2. The syringe is emptied into a 100 cc. glass graduate cylinder for accurate measurement of this volume.

3. The pH, volume, and color of the residual collection is noted on the record form.

4. If the pH is in the range of 1 to 3.0, then titration is made, using Topfer's reagent to a salmon orange color end point. This titration is made by taking 1 ml. of gastric juice (measured with a tuberculin syringe) and adding 1 ml. of distilled water to a 50 ml. beaker containing 1 drop of Topfer's reagent. A buret is filled with 0.1 N NaOH.

   The size of the buret may vary, but it is easier to use a small one. A magnetic stirrer is turned on to get proper mixing during titration. If a magnetic stirrer is not available, the 50 ml. beaker is gently shaken as the NaOH is added. A glass stirring rod may be used to mix the contents.

5. The number of milliequivalents found in the residual volume and in the timed collections are calculated. This is done only if the collections are acid. If any are alkaline (which in this procedure is defined as anything not titratable with Topfer's reagent), this is noted and no titration is made. The calculations are made in the following manner:

   When using 1.0 ml. of the gastric aspirate, 100 x the ml. of o.1 N NaOH required to titrate to endpoint equals the mEq. of HCl per liter of gastric juice.

   Then: $\frac{\text{mEq/L gastric juice x total vol. of 30 min.}}{1000} = \text{mEq/30 min.}$

   The results (which would be in mEq. of acid) are recorded on the appropriate work sheet.

Timed Collections

1. The connecting end of the tubing is hooked to a side arm bottle. This, in turn, is attached to a trap bottle and then to a Stedman pump.

2. A lab timer is set up for 30 minutes.

3. The Stedman pump is turned on and suction begun.

4. The technician checks the tube for patency by injecting 30-50 cc. of air whenever the pressure of the pump reaches 7 to 8 mm. mercury. The purpose of injecting air is to prevent the gastric holes of the tube from being occluded by the tissue of the stomach.

5. The pH and color are checked periodically and noted on the form. The technician should always look for blood or food particles.

6. After the 30-minute period has expired, the side-arm flask is detached and another flask is attached. The contents of the first half hour collection are poured into a graduate cylinder. Notation is made of volume, pH, and color. If the pH is acid, titration is performed and the calculation of mEq./30 min. is recorded on the form.

General Protocol for Gastric Analysis (Quantitative)

1. A 1/2 hr. Basal is done on all patients.

2. If the patient is Achlorhydric at the end of 1/2 hour, 50 mg. of Histalog is given and collections continued for an additional 1 1/2 hrs. If NO free HCl is found during the post-Histalog period, a note is made of Achlorhydria at this level, along with a suggestion that another study, with a maximum dose of Histalog, might be considered for a later date.

3. If free HCl is present in titratable amounts after 1/2 hr., the 30-min. collections are continued for a total Basal period of 2 hrs.

4. If the Basal secretion is 6 mEq./hr or more, a maximum dose of Histalog is given (1.5 mg./kg. of body weight). If the basal secretion is more than 8 mEq./hr., the second Basal hour is collected in 15-minute samples.

5. For Basal secretions less than 6 mEq./hr., Histalog is not given unless specifically requested by the physician.

6. All patients who are Achlorhydric to either dose undergo a cytological collection before the tube is removed.

General Comments

1. Parenterally administered medication is often required during this procedure. If the technician is not qualified to give an injection, an appropriate individual (L.V.N. or R.N. or physician) must be available to do so and should be familiar with the medication and its potential side effects.

2. If the patient shows an abnormal reaction to the Histalog (the technician must know the signs of the drug reaction) an injection of 50 mgs. of Benadryl is given intramuscularly.

3. If the residual volume (before first Basal collection) is greater

than 110 ml. and/or food particles are present in large quantities, the physician is called.

4. If blood is returned during the residual collection, the tube is left in and the physician is called.

Cleaning

1. All glassware is washed with lab soap and tap water.

2. A bath of 0.1 N HCl is used for rinsing. The glassware is placed in this bath for a designated period of time, then rinsed in tap water 12 times.

3. After the 12 rinsings, the glassware is placed in two successive baths of distilled water, and then placed out to dry.

APPENDIX F

DUODENAL DRAINAGE WITH SECRETIN AND GALLBLADDER STIMULATION

Preparation

Same as for Gastric Analysis (see Page 27).

Intubation

1. Patient first clears throat and nose and removed dentures (if any).

2. Patient may gargle with 0.5% Pontocaine (technician gives the patient a small amount in a paper cup). This is a solution for local anesthesia.

3. The double lumened tube is lubricated for several inches near the tip with K-Y jelly.

4. With the patient sitting upright on a gurney, the tube is passed until the second set of gastric holes is beyond the teeth.

5. The patient then lies on his left side facing the technician and is asked to swallow all saliva that forms in the mouth. This will prevent excessive gagging.

6. With the patient lying on the left side, the tube is passed for approximately six inches.

7. The patient then sits upright and with mouth open takes a deep breath. This permits the tube to drop to the greater curvature of the stomach.

8. The patient then lies on the right side. At this point, the tube is slowly passed (it must not be passed quickly or forced down) until it is approximately four inches from the Y-bifurcation of the glass connector.

9. The tube is taped to the chin with masking tape (adhesive tape should not be used because it leaves a residue on the tube).

Tube Placement

1. The patient is brought to the X-ray department in a wheelchair or on a gurney.

2. The position of the tube is checked fluoroscopically. The metal tip should be located at the ligament of Treitz, with the set of gastric holes along the greater curvature of the stomach. The gastric marker should be positioned at the pylorus.

Setup for cholecystokinin-secretin test

1. An ampule of frozen, lypholized cholecystokinin-pancreozymin (Cecekin) is opened and the contents diluted with 10 cc. of sterile saline. This is mixed and kept on ice in a 10 cc. syringe until the time of injection.

2. The ampule of frozen lypholized secretin is prepared in a similar manner. A dose of 1.5 units per kilogram of the patient's body weight is used.

$$\frac{\text{Body weight in lbs.}}{2.2} \times 1.5 = \text{units of secretin}$$

The appropriate number of units is drawn into a syringe and is kept on ice until the time of injection. The number of units of secretin varies from batch to batch and this must be calculated carefully each time.

3. Skin test. 0.1 ml. of secretin is given intracutaneously on one forearm, using a 1.0 ml. tuberculin syringe, and 0.1 ml. of cholecystokinin is given intracutaneously on the other arm. If either test is positive (redness or rash, etc -- ask physician), 100 mg. of Benadryl is given intramuscularly and a 30-minute waiting period follows.

4. The ends of the double-lumined tube (one for the gastric side and one for the duodenal side) are attached to the connectors of 250 ml. side arm flasks, each connected to a trap bottle. These, in turn, are attached to two Stedman pumps. The suction pressure of the pump is adjusted to maximum.

5. An intravenous solution of 500 cc. of normal saline is started and the rate of infusion is adjusted to maintain a slow drip.

Drainage procedure

1. The technician starts a "discard" collection of at least five minutes. Even though this is called a "discard" period, the volume, pH, and color of this collection is noted before the sample is actually disposed of.

2. The "discard" is followed by a 20-minute collection period. This is called the "control" sample. Each bottle is marked with an appropriate marking pen. This collection, which is made in a 250-ml. flask, is poured into a Pyrex graduated cylinder. This is done for better measurement of volume. The volume, pH, and color of the fluid are noted on the form.

3. During both the discard and the control periods, the patency of the tubes is checked frequently by injecting 30 to 50 cc. of air.

4. The physician is called to check the skin tests.

5. The injection of cholecystokinin is given intravenously by the physician.

6. Before beginning the collections, one lab timer should be set for five minutes and another should be set for 30 minutes.

7. Six separate samples of five minutes each are collected on ice. The volume, pH, and color are recorded for each collection.

8. Each tube for the post-cholecystokinin samples should be marked appropriately. These samples, as well as those collected after the secretin injections, are collected in appropriately labeled thick-walled Pyrex conical graduates. These are kept in a large beaker with ice during and after the collection periods.

9. When "B" bile appears (the very dark-black bile), the physician will want a sample centrifuged to see if cholesterol crystals or calcium bilirubinate pigment are present. The material is spun at moderate speed for a period of ten minutes.

10. The sediment is put on a slide with a coverslip for the physician's examination.

11. After the samples have been taken for the 30-minute post-cholecystokinin period, secretin is injected I.V. by the physician. Collections are continued for an additional 30 minutes, in three 10-minute segments. The technician sets one timer for 30 minutes and the other consecutively for each 10-minute period. The color, pH, and volume of each collection are recorded on the form.

12. The tube is withdrawn from the patient, who has been provided with Kleenex and an emesis basin. He may be expected to produce a large quantity of saliva.

13. Material for cytological evaluation is usually prepared as follows:

    a. Six ml. of each 10-minute post-secretin collection is removed and set aside. The remaining fluid is pooled and spun in thick-walled, 60-ml. centrifuge tubes for ten minutes at high speed. The previously removed six ml. of each sample is divided into equal parts (3 ml.) and stored on ice in chilled screw-capped tubes for processing later for bicarbonate and amylase. Six ml. of the precholecystokinin control are prepared and processed in the same way. (The techniques for chemical analysis will not be presented here. The technician can be trained to perform these.)

    b. The centrifuged supernatant is discarded.

    c. A cytology spatula is used to remove the sediment, which is smeared on a slide that has previously been prepared by smearing a small amount of egg albumin on it.

d. The prepared slide is immediately placed in a Papanicolaou's jar containing modified Carnoy's fixative. This fixative may be prepared by the technician using:

60 cc. Alcohol, absolute
30 cc. Chloroform
10 cc. Glacial Acetic Acid

The jar is appropriately labeled and takne directly to the pathology laboratory. Further processing and examination of this material may be undertaken by a properly trained G.I. technician in cooperation with the pathologist.

Cleaning

1. The glassware is cleaned as described in the section on gastric analysis (Page 31).

2. The tube is cleaned in the following manner: Each end of the tube is attached to a faucet and water is run through for a few minutes. The whole tube then is immersed in a sink full of water and a capful of zephiran chloride is added to the water. The tube is soaked for a few moments, then rinsed well with tap water and set out to dry.

APPENDIX G

HOSPITALS IN THE LOS ANGELES AREA HAVING GASTROENTEROLOGICAL LABORATORIES

The following hospitals in the Los Angeles area which have G. I. laboratories were visited for observation in the course of the foregoing research:

Harbor General Hospital, Torrance

Mt. Sinai Hospital, Los Angeles

St. John's Hospital, Santa Monica

St. Joseph's Hospital, Burbank

UCLA Medical Center, Los Angeles

Valley Presbyterian Hospital, Van Nuys

Veterans Administration Wadsworth Hospital, Los Angeles

Other hospitals in the Los Angeles area which have G. I. laboratories include:

Memorial Hospital of Culver City

Memorial Hospital of Gardena

Rio Hondo Hospital

Santa Monica Hospital

APPENDIX H

HOSPITALS SURVEYED FOR EDUCATIONAL BACKGROUNDS AND SOURCE AND TYPE OF TRAINING OF GASTROENTEROLOGY ASSISTANTS

Cedars of Lebanon Hospital, Los Angeles, California

Duke University Medical Center and VA Hospital, Durham, North Carolina

Harbor General Hospital, Torrance, California

Hines Veterans Administration Hospital, Chicago, Illinois

Hospital of the Good Smaritan, Los Angeles, California

Johns Hopkins Hospital, Baltimore, Maryland

Lutheran Hospital of Milwaukee, Wisconsin

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